EXHIBIT A-7

Exhibit 1

UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF NEW YORK

NAOMI GONZALES, Plaintiff, v. AGWAY ENERGY SERVICES, LLC, Defendant.	Case No. 5:18-cv-235 (MAD/ATB)

EXPERT REPORT OF FRANK FELDER, PH.D.

I. Introduction and Qualifications

I am Frank A. Felder, Ph.D., the Director of the Center for Energy, Economic and Environmental Policy, Director of the Rutgers University Energy Institute, and Research Professor at the Edward J. Bloustein School of Planning and Public Policy, Rutgers University. I am also the Principal of Independent Electricity Consultants, LLC. I have been asked by Plaintiff's counsel in the matter of *Gonzales v. Agway Energy Services, LLC* to provide my expert opinions. My opinions are my own and do not reflect the views of Rutgers University. I am being compensated at $400 per hour.

In this report, I have been asked to offer my expert opinions on the following topics:

1. How Energy Service Companies (ESCOs), such as Agway Energy Services (Agway), procure electricity for their customers.

2. What Agway customers on variable pricing would have saved, that is how much they were overcharged, if they were charged a rate by Agway that reflected its costs plus a reasonable margin.

3. What Agway customers on variable pricing would have saved, that is how much they were overcharged, if they were a default retail electricity customer of their utility versus what they actually paid Agway.

My expert opinions are based upon a review of discovery materials (including Agway's data regarding its rates and the costs it incurs to provide its customers with electricity), general electricity market conditions, and my professional background and experience. I reserve the right to modify my findings based upon new information.

I conduct research and teach in the areas of energy markets and policy. I also publish and consult extensively on almost all aspects of wholesale and retail energy markets in the United

States and internationally. Since the implementation of electricity markets in the United States in the early 1990s, I have been involved as a researcher and consultant working on market design and policy, especially in the Northeast and mid-Atlantic regions. I have advised utilities, independent generation owners, generation and transmission developers, wholesale market administrators, public agencies, ESCOs such as Agway, and other industry participants. For almost two decades, I have delivered a two-day short course on electricity markets attended by approximately 2,000 professionals representing a cross section of the industry including electric and natural gas utilities, independent power producers, ESCOs, federal and state regulators, wholesale market operators, and others.

I have served on the Board of Directors of an ESCO that operated in New York in addition to providing consulting and training to ESCO employees. During 2011-2013, I co-chaired the New York Independent System Operator's (NYISO) Consumer Advisory Council, which advised the NYISO Board of Directors and senior management of the New York's wholesale electricity market operator and market administrator on retail consumer issues. I have also consulted for market participants that buy and sell power within the NYISO and mid-Atlantic regions. The mid-Atlantic wholesale electricity market, which includes Pennsylvania, is referred to PJM for historical reasons, and is operated by the PJM Interconnection.

I hold doctorate and master's degrees from the Massachusetts Institute of Technology where my studies focused on electricity markets and power systems. Prior to my graduate studies, I served as a nuclear engineer and submarine officer in the United States Navy. My undergraduate degrees are in applied mathematics from Columbia College and the School of Engineering and Applied Sciences, Columbia University. My curriculum vita containing my

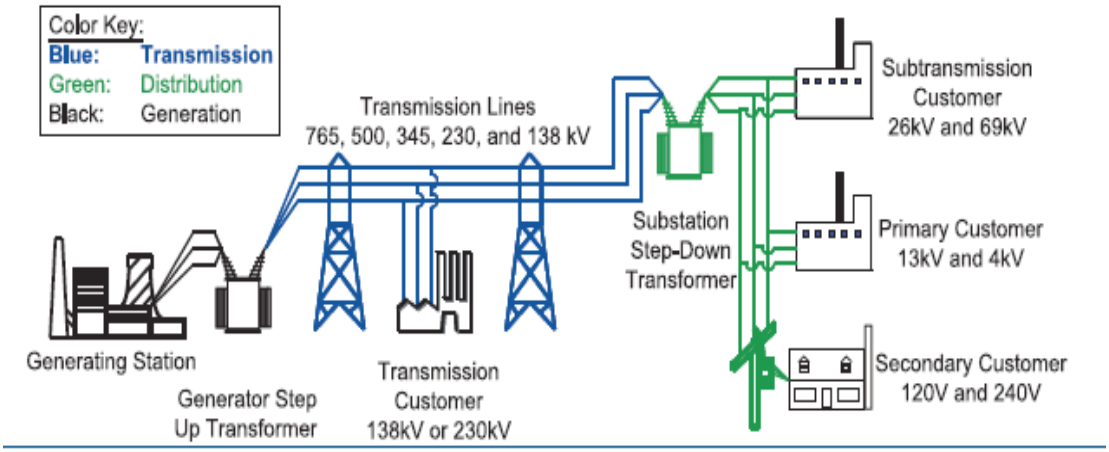
publications for the prior ten years is provided in Exhibit A along with the list of depositions I have given in the last four years.

II. U.S. Wholesale and Retail Electricity Markets

A. Overview

Starting in the 1990s, the United States proceeded to design and implement wholesale and retail electricity markets. The federal government regulates the portions of the electric industry that cross state lines. Individual states, however, regulate the local distribution of electricity and whether there should be retail markets for electricity. Figure 1 illustrates the electricity supply chain starting with electricity generation, transmission and distribution.

New York State and Pennsylvania have established retail electricity markets. Retail customers must still purchase the transmission and distribution of electricity from their local utilities but may either purchase the electricity commodity from either an ESCO or purchase default service from their local utility. ESCOs are also referred to by other names such as Third-Party Energy Providers, Energy Aggregators, and Retail Energy Providers.



Reference: U.S.-Canadian Power System Outage Task Force final report on the 2003 Blackout, p. 5.

Figure 1: The Electric Power Supply Chain

Federal and state policies of establishing electricity markets was a major policy shift from the past. Prior to this shift, retail customers – industrial, commercial and residential – had to purchase both the commodity and the delivery of electricity from their local utility. They did not have a choice of their electricity supplier. The public policy motivation for allowing retail customers to be able to select their ESCO and not being locked into buying electricity from their utility was to enable retail customers to lower their costs compared to what the monopoly utility provided and for retail customers to have more choices. The premise behind this policy is that competition would result in ESCOs being more aggressive than the monopoly utility in reducing wholesale purchasing costs and thereby lower prices and costs for retail customers.

As part of its retail market policy, New York and Pennsylvania (as well as other states) have set up default purchasing services of electricity for those customers that choose not to select an ESCO. Some customers may not want to switch away from utility provision of their electricity, and these customers are referred to as default customers. The respective service is referred to as *default service* or *standard offer service*. In the electric utility industry, the term *rate* refers to the price per unit (dollar per kilowatt-hour or $/kWh) that a utility or ESCO charges. The term *rate* is synonymous with the term *price*. The term *price to compare* (PTC) refers to the rate or price that the utility offers customers pay who are on default service or standard offer service. Typically, this price or rate varies monthly, and default customers may decide to switch from default service to an ESCO at any time.

Agway is an ESCO that has residential electricity customers in New York and Pennsylvania. Agway offers two variable-rate, market-based products: a standard variable rate product and a renewable energy variable rate product. Both variable rate products are preceded by a one- or two-month fixed introductory rate, sometimes referred to as a "teaser rate", that is lower than the standard variable rate and the local utility's rate. Some ESCOs, including Agway, offer a lower introductory rate to attract customers. Subsequently, the variable rates change month to month based upon market conditions.

ESCOs have multiple options to procure electricity for resale to retail customers in New York and Pennsylvania. These options include the following:

- Own electric power plants and produce the electricity for sale;
- Purchase wholesale electricity directly from power plant owners;
- Purchase electricity through the day-ahead and real-time electricity markets from NYISO or PJM (the aforementioned system operators and market administrators for the New York and mid-Atlantic regions);
- Purchase electricity from wholesale marketers and brokers; and
- Multiple combinations of the above.

The price of electricity, as in any market, vary with supply and demand conditions. Supply changes include changes in the prices of fuels used to produce electricity, macroeconomic conditions, and availability of supply resources among other factors. The demand for electricity varies by the type of customers, weather, macroeconomic conditions, day of the week, time of day, and location of customers on the grid, among other factors. When procuring electricity for their retail customers, ESCOs consider these and other factors.

B. Public Policy and the Utility Price to Compare

With the introduction of retail electricity markets, the public policy goal is to have ESCOs use these multiple procurement options in innovative and cost-effective ways to procure electricity at or below prices that they would have paid if they had purchased electricity from their utility and pass a share of those savings to its customers. It is no longer up to the regulatory process, as it was prior to the introduction of retail electricity markets, to ensure that retail customers appropriately paid for utilities' procurement costs. Instead, whether ESCOs' procurement strategies are successful is the sole responsibility of the ESCO and not its retail customers. ESCOs, unlike utilities prior to the introduction of retail electricity markets, as a matter of public policy, do not get to claw back any above market costs in order to ensure that they recover all their costs plus a profit margin. (Unlike ESCOs, when utilities do procure power at below market costs, they had to pass along all of those savings to their customers.) In retail electricity markets, some and perhaps even many ESCOs may not make money or only make small margins.

The State of New York Public Service Commission (NYPSC or Commission) issued on December 12, 2019 an Order Adopting Changes to the Retail Access Energy Market and Establishing Further Process (NYPSC Order), which pertains to my analysis. In the context of this NYPSC Order, it uses the term *savings* to indicate how much a customer would have saved by purchasing from the utility. In subsequent sections I use the term *overcharges*, which is synonymous with *savings* to refer to the same amount of money that a customer was overcharged for purchasing from the ESCO or would have saved if instead purchased from the utility.

The NYPSC regulates retail energy markets including the ability of ESCOs, such as Agway, to sell electricity to residential and other retail customers such as Plaintiff Gonzales, in

New York State.[1] The NYPSC conducted an extensive investigation into the business practices of ESCOs as the basis for its Order. "In designing and implementing these changes, the Commission relies on its extensive experience regarding the retail energy market. The Commission is also guided by the considerable record in the instant proceedings, which parties were invited to develop for the purpose of further illuminating the current state of the Retail Energy Market."[2]. The NYPSC continues: "The record in these proceedings consists of initial testimony, rebuttal testimony, cross-examination testimony and exhibits, initial briefs, reply briefs, and public comments. The evidentiary hearing took place before two Administrative Law Judges (ALJs) over ten days in Albany, beginning on Wednesday, November 29, 2017 and continuing through Tuesday, December 12, 2017. The transcript of the hearing consists of 4,233 pages of testimony and cross-examination of 22 witnesses and panels of witnesses."[3]

Based upon this record[4], the NYPSC found the following items are relevant to this report.

1. Higher ESCO charges compared to utility charges are not justified. "While certain ESCO products may justifiably cost the customer more [than the utility cost], it is troubling that, after the extensive process associated with this track, neither ESCOs nor any other party have shown, to any meaningful degree of certainty, that ESCO charges above utility rates were generally – or in any specific instances – justified."[5] "It is both notable and troubling that no ESCO party could or would produce objective evidence regarding: the specific value-added products or services that are currently offered in New York; how many ESCO customers elect to receive those products and services; the level of premium ESCO customers are charged for the value-added product or service; and what type and level of benefit is obtained by customers who receive the products or services offered."[6]

2. Variable rate plans offer no demonstrated consumer benefits. "We [NYPSC] find that there is no demonstrated customer benefit to allowing ESCOs to offer this [variable-rate,

[1] NYPSC Order, pp. 6-7.
[2] NYPSC Order, p. 2.
[3] NYPSC Order, pp. 3-4.
[4] Agway participated in this proceeding; see p. 5 of the NYPSC Order.
[5] NYPSC Order, p. 30.
[6] NYPSC Order, p. 51.

> commodity-only service] to mass-market customers."[7] "Because customers receive no value when they pay a premium for variable-rate commodity-only service from ESCOs, ESCOs will be prohibited from offering variable-rate, commodity-only service except where the offering includes guaranteed savings."[8]

From the findings of the NYPSC, for variable rate products, the utility price is an appropriate benchmark to determine the amount of overcharges that a customer paid its ESCO. Furthermore, in Agway's welcome letter to the Plaintiff, it states: "**We're excited to be providing you with this special offer, you will receive a competitive monthly variable price starting with your next scheduled meter reading.**"[9] Based upon the NYPSC findings, the utility price to compare is an appropriate benchmark of the "competitive monthly variable price" that Agway commits to in its welcome letter.

III. Calculation of Agway's Overcharges Compared to Agway's Cost of Goods Sold (COGS)

In this section and Section IV, I calculate the amount that Agway overcharged its variable rate customers[10] in New York and Pennsylvania under various assumptions. In Section V, I conduct the same calculations as I do in this section and in Section IV for a specific customer of Agway.

Conceptually, overcharges are the amount that Agway charged its customers above what it should have based upon Agway's sales agreement. As stated in the standard sales agreement

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[7] NYPSC Order, p. 37.
[8] NYPSC Order, p. 39.
[9] Bates Number AGWAY 583794, bold in the original.
[10] I identified "variable rate customers" in the relevant spreadsheets provided by Agway as any class of customer that Agway used the term "variable" in its description such as "Variable," "Daily Variable Priced," "Fixed to Variable," and "Fixed to Variable Priced." I did not include "Variable Sensitive", which is an employee discount product. I did not include "Green Variable" transactions.

between the Plaintiff and Agway: "The Electric Variable Rate shall each month reflect the cost of electricity acquired by Agway from all sources (including energy, capacity, settlement, ancillaries), related transmission and distribution charges and other market-related factors, plus all applicable taxes, fees, charges or other assessments and Agway's costs, expenses and margins."[11] In short, the overcharges are the difference between Agway's revenues and its total costs plus a margin.

I calculate overcharges using the following formula only a monthly basis:

Overcharges ($) = Agway's Revenues ($) minus Agway's Total Costs ($), **(Formula 1)**

where

Agway's Total Costs ($) = Cost of Goods Sold (COGS) + NYSERDA fee + Gross Receipt Tax (GRT) + Direct Energy fee for National Grid + Overhead. **(Formula 2)**

I then evaluate the overcharges using different margins.

The New York State and Pennsylvania electric utilities covered by my report are listed in Table 1. The relevant data that Agway provided in its discovery covers the time period from December 2011 through November 2019.

Table 1: New York State and Pennsylvania Electric Utilities

New York Electric Utilities	Pennsylvania Electric Utilities
Central Hudson	Duquesne
Con Edison	MetEd
National Grid	PECO
Niagara Mohawk	Penelec
NY State Electric and Gas	PEPCO
Orange and Rockland	PPL
Rochester Gas & Electric	WPENN

[11] Agway Residential Customer Disclosure Statement, Bates Number AGWAY 583795.

Agway provided monthly spreadsheets that list and quantify its electricity sales revenues, units sold (in kWh), and COGS. Table 2 lists the Bates Numbers of the Excel spreadsheets that I used for my calculations.

Table 2: Bates Numbers of Agway Discovery Files Containing Electricity Sales Revenues, Units (kWh) Sold, and Cost of Goods Sold (COGS)

Year	2011	2012	2013	2014	2015	2016	2017	2018	2019
Jan		770873	000072	000073	529386	529398	529410	529422	529434
Feb		000063	000064	000065	529387	529399	529411	529423	529435
Mar		000093	000094	000095	529388	529400	529412	529424	529436
Apr		000041	000042	000043	529389	529401	529413	529425	529437
May		000101	000102	529379	529390	529402	529414	529426	529438
Jun		000086	000087	529378	529391	529403	529415	529427	529439
Jul		000079	000080	529380	529392	529404	529416	529428	529440
Aug		000049	000050	529381	529393	529405	529417	529429	529441
Sep		000123	000124	529382	529394	529406	529418	529430	529442
Oct		000116	000117	529383	529395	529407	529419	529431	529443
Nov		000109	000110	529384	529396	529408	529420	529432	529444
Dec	00055	000056	000057	529385	529397	529409	529421	529433	

In this section, the COGS are based upon Agway's purchases from the Hess Corporation, referred to in the spreadsheets as the Hess Index Price (HIP).[12] In the next section, I present analogous overcharge calculations based upon the utility price to compare, which is the price

[12] Direct Energy acquired Hess Energy; the discovery material sometimes refers to Direct Energy charges that are related to Agway's electricity supply costs.

electricity customers would have paid if they have purchased their electricity from their local utility. In both cases, Agway's Revenues are the same so the major difference in the numerical results of Overcharges is the COGS.

I have been informed by Plaintiff's counsel that Agway had the following costs in addition to its COGS[13]:

- NYSERDA fee = $0.005/kWh (NYSERDA is the New York State Energy Research Development Authority, and this fee covers the cost of purchasing renewable energy credits and zero emission credits, required environmental attributes by New York State);
- Gross Receipt Tax (GRT) = $0.002/kWh for Agway's customers served by the New York utility ConEdison and $0.005/kWh for Agway's customers located in Pennsylvania;
- Direct Energy Charge = $0.0025/kWh for Agway's customers served by the New York Utility National Grid; this is another fee in addition to Hess' COGS; and
- Overhead Expenses, which are discussed immediately below.

To determine Agway's overhead expenses, I used Agway's profit and loss statements from October 2010 through September 2018, which are Excel spreadsheets with Bates Numbers AGWAY 000141-000148. From these spreadsheets, I compiled Table 3 to calculated Agway's electricity related overhead on a per kWh basis.

[13] Bates Number AGWAY 277298. My understanding from Plaintiff's counsel is that these values may have changed slightly over time and that any such adjustments will be ascertained through discovery, which is ongoing. If provided updated information, I can include any such adjustments in subsequent damage calculations, if requested. Based upon the small size of these fees and that they apply to a subset of Agway variable transactions, small changes in their amount from the values that I used for a subset of the period of time in question will have a small effect on overcharges. The direction of the effect depends if these fees increase, which will reduce overcharges, or decrease, which will increase overcharges.

Table 3: Agway's Electricity Related Expenses per Kilowatt-hour (kWh) Basis

		Total	Percent
Total Expenses ($)	$	82,249,003	
EnergyGuard Electric ($)	$	583,900	
EnergyGuard Gas/Home Heating Repair Plan ($)	$	5,399,407	
Expenses minus EnergyGuard ($)	$	76,265,696	
Natural Gas Sales ($)	$	202,019,999	37%
Electricity Sales ($)	$	343,686,887	63%
Electricity Units Sold (kWh)		3,928,775,710	
Electricity Allocation of Expenses per kWh ($/kWh)	$	0.0122	

I deducted from Agway's Total Expenses its EnergyGuard Electric and EnergyGuard Gas costs, which are costs associated with programs that provide customers with repair service of their electric and natural gas related home equipment. I remove the costs of the EnergyGuard Gas program (including its predecessor program Home Heating Repair Plan (HHRP)) because those do not pertain to Agway's electricity business. I remove the EnergyGuard Electricity costs and consider them later in my analysis for reasons I describe below.

Of Agway's remaining Total Expenses, I allocate 63% to its electricity business based upon the percentage of electricity sales to total sales of electricity plus natural gas. The final result is that Agway's electricity related expenses per kWh are $0.0122 or 1.22 cents.

Table 4 presents the results of my calculations. The first two rows in Table 4 report the total applicable electricity sales in dollars and in units sold (kilowatt-hours) respectively. The next four rows present the overcharge calculations for four cases based upon the aggregation of the monthly positive overcharges. By monthly positive overcharges, I mean that if overcharges were negative for a particular month, I treated that month's overcharges as zero. Variable rate

customers are monthly and for each month should receive the value of their agreement, as in the case of the Plaintiff who was promised a "**competitive monthly variable price**", and not have one month affect another month.

The No Margin case is the difference in Agway's revenues minus the Total Costs per Formula 1 and 2. The Introductory Rate Margin case assumes Agway is entitled to recover a margin of $0.003184/kWh, which is the average of its Introduction Rate Margin based upon the spreadsheets identified in Table 2.[14] Including the Introductory Rate Margin reduces the overcharges when compared to not including it from $30,657,890 to $25,010,541 in the case of No EnergyGuard. The EnergyGuard column adds back the $583,900 (see Table 2, second row, EnergyGuard Electric). My understanding is that the Plaintiff contends that the EnergyGuard Electric costs should not be considered in the overcharge analysis, but I have been asked to conduct my analysis without and with these costs in case they are determined to be appropriate.

In the Overcharge 5% Margin and 10% Margin cases, I increase Agway's Total Costs by 5% and 10% respectively, i.e., I multiply Formula 2 times 1.05 and 1.10. Notice that as the percent margin increases from 5% to 10%, the corresponding overcharges decrease (as expected) from $24,034,746 to $17,581,928 for the case of No EnergyGuard. The EnergyGuard Electric overcharge numbers follow the same trend as the No EnergyGuard Electric overcharges but include Agway's EnergyGuard Electric costs.

Table 4: Results of Calculating Agway's Overcharges Based Upon Cost of Goods Sold Plus Various Margins

Electricity Sales ($)	$ 165,924,722
Electricity Units (kWh)	1,793,699,921

[14] Introductory Rate Margins were available for May 2014 through November 2019.

	No EnergyGuard	EnergyGuard
Overcharge: No Margin	$ 30,657,890	$ 30,073,990
Overcharge: Introductory Rate Margin	$ 25,010,541	$ 24,426,641
Overcharge: 5% Margin	$ 24,034,746	$ 23,450,847
Overcharge: 10% Margin	$ 17,581,928	$ 16,998,028

Although the Agway contract allows for including a margin, the large amount of the overcharges even after considering reasonable margins of 5 and 10 percent indicate that Agway is not charging rates based upon its costs.

IV. Actual Agway Variable Prices and Charges Compared to Default Service

In this section, the COGS used in Formula 2 are based upon the utilities' default service price to compare and associated margin variations. Since this analysis is based upon the utility price to compare, I do not include the NYSERDA fee, the Direct Energy fee, and the GRT because the price to compare represents the entire COGS and includes the GRT.[15]

The retail prices that a customer would have paid if they were purchasing the default service, i.e., the prices to compare, are in the discovery material provided by Agway.[16] Table 4 provides the Bates Number of the files that contain the utility prices to compare. These prices to compare vary by utility and by month.

[15] See https://www.coned.com/_external/cerates/supply_charges.asp and https://www.puc.state.pa.us/general/consumer_ed/pdf/Electric_Bill_Breakdown-PECO_RH.pdf regarding the inclusion of the GRT in the PTC in ConEdison and Pennsylvania (using PECO).
[16] In the few instances in which the PTC was missing for a given month for a utility, I averaged the PTC from the prior and subsequent months to estimate the missing PTC. For January 2013, I used the PTCs from February 2013.

Table 5: Bates Numbers of Agway Discovery Files Containing Utilities' Price to Compare for Default Service

Year	2013	2014	2015	2016	2017	2018	2019
Jan		713270	713254	713303	589554	713330	713304
Feb	712828	713281	713255	713300	713327	612232	713301
Mar	712829	713256	713257	713310	713333	713311	713312
Apr	308342	713259	713730	713154	589547	713322	713296
May	712830	713262	713732	713194	713335	713313	713314
Jun		713735	713734	713192	713332	713307	713308
Jul	712831	713264	713737	713189	713331	612235	713306
Aug	712853	713266	713267	589549	713323	713297	713298
Sep	712825	713268	713269	713404	713405	713409	713320
Oct	712826	713272	713743	713401	713339	713317	713318
Nov	713277	713276		589562	713337	612241	713316
Dec	713279	713278	713751	713324	713325	713299	713155

Note: For missing months, I averaged the prior and subsequent months' prices to compare.

Given the available data, I compare the number of times Agway's monthly rate to the corresponding utility's price to compare and found that 713 times out of 758 (or 94% of the time), Agway's rate was higher than the utility's price to compare.

The overcharge calculations proceed in this section as they did in the prior section with the only difference of using the utility prices to compare to calculate the COGS. Table 6 summarizes the overcharges based upon the utility price to compare. Included in Table 6, last row, is the overcharges not including Agway's overhead. As found by the NYPSC, the appropriate benchmark in comparing an ESCO's variable rate is the utility's price to compare.

Table 6: Results of Calculating Agway's Overcharges Based Upon Utility Price to Compare

	No EnergyGuard	EnergyGuard
Overcharge: No Margin	$ 36,797,334	$ 36,213,434
Overcharge: No Overhead & No Margin	$ 56,647,884	$ 56,063,984

V. Calculation of Individual Class Members Overcharges

The above analysis calculated the overcharges in aggregate for Agway's customers. Agway's spreadsheets, in particular those listed in Table 2, have for each customer by month the information I need to calculate the overcharge. From these spreadsheets, I know for each customer the total of the customer's bill, the amount of electricity purchased, the price Agway charged, and the corresponding COGS. If asked, I can calculate for a given set of customers, for a given period of time, for a given margin (if any), the overcharge for each individual customer. Table 7 provides the calculation for Agway Customer #394440 for May 2018. It follows the same calculation as described above using Formulas 1 and 2.

Table 7: Customer-Level Calculation for Account #394440, May 2018

Time Period	April 2 to May 2, 2018	
Customer Identification Number	#394440	
Utility	National Grid	
Customer Type	Residential	
Product Name	Electric Rate Ready Code Variable Rate	
Excel Spreadsheet Bates Number	AGWAY 529426	
Excel Row Number	1662	
	Agway COGS	**PTC COGS**
Units Sold (kWh)	946	946
Electric Revenue (Invoice)	$67.96	$67.96
Average HIP (Hess) Cost (COGS)	$32.96	$33.11
NYSERDA Fee @$0.005/kWh	$4.73	n/a
Gross Receipt Tax (ConEd only)	$0.00	$0.00
Direct Energy Fee for National Grid	$2.37	n/a
Overhead @$0.0122/kWh	$11.54	$11.57
Overcharge: No Margin	$16.34	$23.28
Overcharge: Introductory Rate Margin @$0.003184/kWh	$13.33	
Overcharge: 5% Margin	$13.76	
Overcharge: 10% Margin	$11.18	
Overcharge, No Overhead		$34.85

VI. EnergyGuard for Electricity

The additional cost to Agway of EnergyGuard for its electricity customers is $583,900. As the NYPSC found in its proceeding, no ESCO provided objective evidence of the value such services provided. Using the analysis in this section, the $36.8 million of overcharges (including overhead) or the $56.6 million (excluding overhead) of overcharges for the provision of EnergyGuard to its electric customers is not commensurate with the $583,900 cost.

VII. Calculation of Additional Damages

I have been informed by Plaintiff's counsel that an additional $500 of damages may be awarded to each of Agway's New York residential electricity customers. The precise number of such customers will be determined based on ongoing discovery in the case and the parameters of the class that the Court certifies. Once that figure is established, this portion of the damages sustained by the class may be determined by multiplying the number of New York class members by $500. It is my intention to perform this calculation at the appropriate time.

VII. Summary

Assuming that a jury or finder of fact concludes that Agway should have been selling electricity under its variable rate based on its COGS and the other expenses that I just described and perhaps escalated to recover some lower margin than it charged, I can calculate the relevant overcharges.

I have calculated the overcharges Agway charged its customers assuming different margins and whether EnergyGuard should be included. I have demonstrated that the method I have used can be applied to Agway's aggregate sales and to each customer individually using a standardized formula. If asked and provide the appropriate margin parameters, I could calculate the overcharges for each member of the class.

This concludes my expert report.

Dated: July 23, 2020

Frank A. Felder, Ph.D.

Exhibit A

FRANK A. FELDER

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ACADEMIC EXPERIENCE

Director, Rutgers Energy Institute, July 2018 to present

Director, Center for Energy, Economics & Environmental Policy, October 2006 to present, *Acting Director*, February 2006 to September 2006

Research Professor, July 2018 to present*, Associate Research Professor*, September 2007 to June 2018, *Assistant Research Professor*, September 2004 to August 2007

Program Director, Public Informatics, Bloustein School of Planning and Public Policy, July 2018 to present

Manhattan College, School of Business, New York City, NY, *Assistant Professor of Management,* Tenure-track Appointment, August 2002 to August 2004

Massachusetts Institute of Technology, Cambridge, MA
Ph.D. in Technology, Management and Policy (Engineering Systems Division), September 2001

Dissertation topic: Probabilistic Risk Analysis of Restructured Electric Power Systems: Implications for Reliability Analysis and Policies
Dissertation Committee: Professor Michael W. Golay, Professor William W. Hogan, and Dr. Richard D. Tabors
Research Assistant: January 1998 to May 2001 for two research projects in applying probabilistic risk analysis to the regulation of nuclear facilities (Professor Golay) and for one project on the sale of commercial nuclear power plants as part of electric utility industry restructuring (Professor Hansen).
Teaching Assistant: Fall semester 1997 for a graduate seminar in Technology and Policy (Dr. Tabors).

M.S. in Technology and Policy, 1994

Columbia University, New York, NY
B.S. Applied Mathematics, 1987; B.A. in Mathematics, 1987

PUBLICATIONS AND RESEARCH (*indicates student or post-doctoral advisee; last ten years provided)

Peer Reviewed Publications

Nguyen*, H., and Felder, F. (2020). Generation Expansion Planning with Renewable Energy Credit Markets: A Bilevel Programming Approach, *Applied Energy*, 276(15), https://doi.org/10.1016/j.apenergy.2020.115472.

Hochman, G., Goldman, A., Felder, F., Mayer, J., Miller, A., Holland, P., Goldman, L., Manocha, P., Ze, S., Aleti, S. (2020). The potential economic feasibility of direct electrochemical nitrogen reduction as a route to ammonia, *ACS Sustainable Chemistry & Engineering*, 8(24), 8938-8948, https://doi.org/10.1021/acssuschemeng.0c01206.

Froio*, Z., Kumar*, P. and Felder, F. (2020), Not Adding Up: Free Ridership and Spillover Calculations in *Energy Efficiency Evaluations*, *Energy Efficiency*, 13, 991-1005. https://doi.org/10.1007/s12053-020-09872-6.

Selcuklu*, S., Coit D., Felder, F. (2020). Pareto Uncertainty Index for Evaluating and Comparing Solutions for Stochastic Multiple Objective Problems, *European Journal of Operational Research*, 284(2), 644-659.

Rodgers*, M., Coit, D., and Felder, F. (2019). A Metamodeling Framework for Quantifying Health Damages of Power Grid Expansion Plans, *International Journal of Environmental Research and Public Health, 16, 1857.*

Rodgers*, M., Coit, D., and Felder, F. (2019). Assessing the Effects of Power Grid Expansion on Human Health Externalities, *Socio-Economic Planning Sciences*, 66, 92-104.

Rodgers*, M., Coit, D., Felder, F., Carlton, A. (2018), Generation Expansion Planning Considering Health and Societal Damages - A Simulation-Based Optimization Approach, *Energy*, 164, 951-963.

Song*, S., Qing, L., Felder, F., Wang, H., and Coit, D. (2018). Integrated optimization of offshore wind farm layout design and turbine opportunistic condition-based maintenance, *Computers & Industrial Engineering*, 120, 288-297.

Figueroa-Candia*, M., Felder, F. and Coit, D. (2018). Resiliency-Based Optimization of Restoration Policies for Electric Power Distribution Systems, *Electric Power Systems Research*, 161, 188-198.

Zhou*, J., Huang, N., Coit, D. W., & Felder, F. A. (2018). Combined effects of load dynamics and dependence clusters on cascading failures in network systems. *Reliability Engineering & System Safety*, 170, 116-126.

Felder, F. and Athawale, R. (2018). "PACT-a-Mole": the case against using the Program Administrator Test for energy efficiency programs. *Energy Efficiency*, 11(1), 1-11.

Shan*, X., Felder, F., & Coit, D. (2017). Game-theoretic Models for Electric Distribution Resiliency/Reliability from a Multiple Stakeholder Perspective. *IISE Transactions*, 49(2), 159-177.

Felder, F., & R. Athawale. (2016). Optimizing New York's Reforming the Energy Vision. *Utilities Policy*, 41C, 160-162.

Farkas*, C. M., Moeller*, M. D., Felder, F. A., Henderson, B. H., Carlton, A. G. (2016). High Electricity Demand in the Northeast U.S.: PJM Reliability Network and Peaking Unit Impacts on Air Quality. *Environmental Science & Technology*, 50 (15), 8375-8384.

Athawale, R., Felder, F., & Goldman*, L. (2016). Do CHPs Perform? Case Study of NYSERDA Funded Projects. *Energy Policy*, 97, 618-627.

Felder, F. (2016). Why Can't We All Get Along? A Conceptual Analysis Combined with a Case Study. *Energy Policy*, 96, 711-716.

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Chandramowli*, S., Felder, F., Mantell, N., Irving, W., & Seneca, J. (2016). LP-CEM: A modeling tool for power systems planning incorporating climate change effects and macro-economic trends. *Energy Strategy Review*, 11, 1-18.

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Farkas*, C., Moeller*, M., Felder, F., Baker, K.R., Rodgers, M., & Carlton, A. G. (2015). Temporalization of Peak Electric Generation PM Emissions during High Energy Demand Days. *Environmental Science & Technology*, 49(7), 4696-4704.

Bridges*, A., Felder, F., McKelvey*, K. & Niyogi*, I. (2015). Screening for Health Effects in Energy Planning. *Energy Research and Social Science*, 6, 74-77.

Athawale, R., & Felder, F. (2014). Incentives for Combined Heat and Power Plants: How to increase society benefits. *Utilities Policy*, 31, 121-132.

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Tekiner-Mogulkoc*, H., Coit, D., & Felder, F. (2012). Electric Power System Generation Expansion Plans Considering the Impact of Smart Grid Technologies. *International Journal of Electrical Power and Energy Systems*, 42(1), 229–239.

Chandramowli*, S., Transue*, M., & Felder, F. (2011). Analysis of Barriers to Development in Landfill Communities Using Interpretive Structural Modeling. *Habitat International*, 35, 246-253.

Tekiner*, H., Coit, D., & Felder, F. (2010). Multi-period Multi-objective Electricity Generation Expansion Planning Problem with Monte-Carlo Simulation. *Electric Power Systems Research*, 80(12), 1394-1405.

Transue*, M., & Felder, F. (2010). Comparison of Energy Efficiency Incentive Programs: Rebates and White Certificates. *Utilities Policy*, 18(2), 103-111.

U.S. National Science Foundation Grants (Peer Reviewed)

RAPID: COVID-19, Consumption, and Multi-dimensional Analysis of Risk (C-CAR), CBET 2031677, $190,764, Senior Investigator, June 1, 2020 through May 31, 2021.

Collaborative Research: CAS: Electrochemical Approaches to Sustainable Dinitrogen Fixation, CHE/CAS 1955014, $295,216, Senior Investigator, August 1, 2020 through July 31, 2023.

Collaborative Research Modeling Strategic Regulators in Network Infrastructure Planning, $399,002, (Rutgers University grant of $85,890), Principal Investigator, CMMI 1825225, September 1, 2018 through August 31, 2021.

Electrochemical Approaches to Sustainable Dinitrogen Fixation, $300,000, Senior Investigator, CHE 1665146, September 1, 2017 through August 31, 2020.

EAGER: Smart & Connected Communities, National Science Foundation, $250,000, Senior Investigator, AGS1645786, August 1, 2016 through July 31, 2018.

EaSM-3: Regional decadal predictions of coupled climate-human systems, National Science Foundation, OCE1419584, $1,200,000, co-PI, June 1, 2014 through August 31, 2017. Designated Bloustein PI for $414,615.

Green Energy Technology for Undergraduates Program (GET UP!), National Science Foundation, EEC1263250, $367,890, Senior Personnel, March 15, 2013 through February 29, 2016. Presented to high school teachers and undergraduate students on July 9, 2014.

Climate to Humans: A Study of Urbanized Coastal Environments, Their Economics and Vulnerability to Climate Change, National Science Foundation, OCE1049088, $3,853,332, co-PI, March 1, 2010 through February 28, 2016. Designated Bloustein PI for $525,448. Additional $225,000 assigned Bloustein.

IGERT: Solutions for Renewable and Sustainable Fuels in the 21st Century, National Science Foundation OCE1049088, $3,197,329, co-PI and Lead on Policy and Infrastructure Logistics for Efficient Fuel Technology Deployment, September 1, 2009 through August 30, 2014. Funded 24 doctoral students (including 2 Bloustein students) and 4 master students. Served on Leadership, Committee and Admission Committee. Developed and taught two new graduate seminars.

Nanotechnology for Clean Energy, National Science Foundation, 0903661, Faculty, $1,218,737, 2008-2013. Developed graduate course given to Rutgers and Princeton Universities.

The Electricity Journal

Baldwin, S. and Felder, F. (2019). Residential Energy Supply Market: Unmet Promises And Needed Reforms. *The Electricity Journal,* 32(3), 31-38.

Freed, M. and Felder, F. (2017). Non-energy benefits: Workhorse or unicorn of energy efficiency programs? *The Electricity Journal*, 30(1), 43-46.

Felder, F. (2015). Should Relief be Granted from the Clean Power Plan for Reliability Reasons? *The Electricity Journal,* 28(6), 5-11.

Felder, F., and Athawale, R. (2014). The Life and Death of the Utility Death Spiral. *The Electricity Journal*, 27(6), 9-16.

Chandramowli*, S., & Felder, F. (2014). Climate Change and Power Systems Planning – Opportunities and Challenges. *The Electricity Journal*, 27(4), 40-50.

Felder, F. (2013). Nuclear Power in the Second Obama Administration. *The Electricity Journal*, 26(2), 25-31.

Felder, F. (2012). Watching the ISO Watchman? *The Electricity Journal*, 25(10), 24-37.

Felder, F. (2011). Examining Electricity Price Suppression Due to Renewable Resources and Other Grid Investments. *The Electricity Journal*, 24(4), 34-46.

Felder, F. (2010). The Practical Equity Implications of Advanced Metering Infrastructure. *The Electricity Journal*, 23(6), 56-64.

Law Review Journals

Tortta, J., Dressel, A., Agbre, S., Benevento, D., Butrus, G., Chambers, T., …Spina, S. (2014). Report of the System Reliability & Planning Committee. *Energy Law Journal*, 35(2), 1-21.

Felder, F. (2014). Climate Change Mitigation and the Global Energy System**.** *Villanova Environmental Law Journal*, 25(1), 89-106.

Book Chapters

Hochman, G., Goldman, A. and Felder, F. (2020). "Alternative ammonia production processes and the use of renewables." In Murthy, G. *Biomass, Biofuels, Biochemicals- Green-Economy: Systems analysis for sustainability.* Elsevier pre-publication.

Felder, F. (2020) "Market Versus Planning Approaches to Transmission and Distribution Investment." In M. R. Hesamzadeh, J. Rosellon, & I. Vogelsang. *Transmission Network Investment in Liberalized Power Markets*. Springer, pre-publication.

Athawale, R., & Felder, F. (2016). Residential Rate Design and Death Spiral for Electric Utilities: Efficiency and Equity Considerations. In F. Sioshansi (Ed.), *Future of Utilities – Utilities of the Future: How technological innovations in distributed energy resources will reshape the electric power system* (pp. 193-209). Amsterdam: Elsevier Press, 2016.

Felder, F. & Chandramowli*, S (2016). Impact of Extreme Events on the Electric Power Sector: Challenges, Vulnerabilities, Institutional Responses, and Planning Implications from Hurricane Sandy. In K. M. O'Neill, & D. J. Van Abs, (Eds.), *Taking Chances on the Coast After Hurricane Sandy* (pp. 242-257). New Brunswick, NJ: Rutgers University Press.

Felder, F. (2014). What Future for the Grid Operator? In F. Sioshansi (Ed.), *Distributed Generation and its Implications for the Utility Industry* (pp. 399-415). Amsterdam: Elsevier Press.

Felder, F. (2013). The evolution of demand side management in the United States. In F. Sioshansi (Ed.), *End of Electricity Demand Growth: How energy efficiently can put an end to the need for more power plants (*pp. 179-200). Amsterdam: Elsevier Press.

Felder, F. (2012). The Equity Implications of Smart Grid: Questioning the Size and Distribution Of Smart Grid Costs and Benefits. In F. Sioshansi (Ed.). *Smart Grid: Integrating Renewable, Distributed & Efficient Energy* (pp. 85-100). Amsterdam: Elsevier Press.

Felder, F., Andrews, C., & Hulkower, S. (2011). Which Energy Future. In F. Sioshansi (Ed.), *Energy Sustainability and the Environment: Technology, incentives, behavior* **(**pp. 30-61). Amsterdam: Elsevier Press.

Working Papers

Zhou*, J., Coit, D. W., Felder, F. A., Wang, D. Resiliency-based restoration optimization for dependent network systems against cascading failures. *Reliability Engineering & System Safety*, submitted.

Conference Papers, Presentations and Posters

Kumar, P., Cuite C., Felder F., and Shwom R. "Evaluating Spillovers from Behavioral Interventions for Food, Energy, Water (FEW) Conservation", Rutgers Climate Symposium 2019, Science and Society: Perspectives on A Green New Deal, November 20, 2019, Rutgers University, New Jersey.

J. Zhou, D. W. Coit, F. A. Felder (2019), "Joint Effects of Local and Global Load Redistribution Model On Mixed Cascading Failures in Network Systems," INFORMS Annual Meeting, October 2019, Seattle, WA, USA, oral presentation.

Kumar, P., Felder F., and Shwom R. "Exploring relationship between willingness to pay for the energy efficient appliances and socio-economic factors in Europe." Energy and Society in Transition: 2nd International Conference on Energy Research and Social Science, May 28, 2019, Arizona State University, Tempe, USA.

Kumar, P., Cuite C., Felder F., and Shwom R. "Evaluating Role of Human Factors in Energy Efficiency Behavior.", Department of Human Ecology Student Poster Session, May 7, 2019, Rutgers University, New Jersey.

Felder, F., "Energy Outlook," moderator and panelist, PSEG Board of Directors meeting, June 18, 2019.

Felder, F., "New Jersey's Roadmap to Zero Carbon Emissions in 2050!?" 8th Annual Renewable Energy, Clean Tech and Climate Change Conference, New Jersey Institute for Continuing Legal Education, May 2, 2019.

Felder, F., "Energy & Transportation," moderator, Eleventh Annual Krueckeberg Doctoral Conference in Urban Studies, Urban Planning, and Public Policy, Bloustein School of Planning and Public Policy, Rutgers University, New Brunswick, NJ, March 7, 2019.

Zhou, J., Tsianikas, S., Coit, D., and Felder, F. "Resiliency based optimization for western U.S. transmission grid against cascading failures", Proceedings of the 2019 IISE Annual Conference, Orlando, FL, May 18-21, 2019.

Felder, F., "Climate Change, Coastal Flooding, and the Electric Power Grid," Geographical Sciences Committee, National Academies of Sciences, Engineering, and Medicine, Washington DC, December 6, 2018.

Felder, F., "Aligning Research and Government Policies to Advance Science in the Food, Energy, Water Nexus", Yixing Jiangsu, China, October 25, 2018.

Felder, F., "Advancing Offshore Wind in New Jersey", Time for Turbines: What a Difference a Year Makes, Atlantic City, August 20, 2018.

Zhou, J., Coit, D., and Felder, F., "Optimal Restoration for Resilience of Dependency Systems

Against Cascading Failures", Proceedings of the 2018 IISE Annual Conference, 2018.

Felder, F., "Climate Change and New Jersey Energy Policy", New Jersey Office of Legislative Services, Trenton, NJ, April 10, 2018.

Felder, F., "Energy Economics", Mandela Washington Fellows Program, July 20, 2017, Rutgers University.

Song, S., Q. Li, Felder, F., H. Wang, & D. Coit, "Integrated Optimization of Offshore Wind Farm Layout Design and Turbine Opportunistic Condition-Based Maintenance," INFORMS, Nashville, TN, Nov. 16, 2016.

J. Zhou, N. Huang, D. W. Coit, F. A. Felder (2016), "Critical effect of dependence clusters on cascading failures in network systems," INFORMS Annual Meeting, November 2016, Nashville, TN, USA, oral presentation.

Moeller, M., Felder, F., K. Baker, A. Carlton, "Air Pollution Externalities and Energy Choices: Linking Electricity Dispatch, Air Quality and Health Impact Models," CMAS: Community Modeling and Analysis System Conference, University of North Carolina, Oct. 24, 2016.

Felder, F., "Analysis of United States Policies to Promote CHP," The 15th International Symposium on District Heating and Cooling, September 15, 2016, Seoul, Korea.

Felder, F., "Energy Economics", Mandela Washington Fellows Program, July 15, 2016, Rutgers University.

Felder, F., "Understanding Electricity, Emission and Renewable Resource Markets," New Jersey Department of Environmental Protection Clean Air Council, May 11, 2016.

Shankar N. Chandramowli, Frank A. Felder, Xiazojun G. Shan, "Assessing the Policy Interaction Effect of Renewable Portfolio Standards (RPS) and Clean Power Plan (CPP) Emissions Goals for States in the U.S. Northeast," Proceedings of the ASME 2016 Power and Energy Conference, PowerEnergy2016, Charlotte, North Carolina, June 26-30, 2016 (paper and presentation).

Felder, F., "Energy Security and Resiliency," Institute of Public Utilities Grid School 2015, Michigan State University, Charleston, SC, March 9, 2016.

Felder, F., U.S. Northeastern Electricity Markets, Renewable and Electricity Transition to the 21st Century, International Workshop, Hong Kong, Feb. 21-23, 2016 (paper and presentation).

Felder, F., "International Experiences in Power Market Development and Cross Border Electricity Trade: Lessons Learned from Emerging and Developed Markets," USAID South Asia Regional Initiative for Energy Integration, Conference on Sustainable Development of Power Sector and Enhancement of Electricity Trade in the South Asia Region: Policy, Regulatory Issues, Challenges and Way Forward, January 15, 2016, New Delhi, India.

Felder, F., "U.S. Electricity Market Trends and the PJM Energy Market," Konkuk University, December 17, 2015.

Felder, F., "U.S. Electricity Market Trends," Konkuk University, December 15, 2015.

Felder, F., "U.S. Electricity Markets and Demand Response," Korea University, December 14, 2015.

Song, S, Felder, F., Bowers, L., Seroka, G., Dunk, R., Miles, T. and Coit, D. "Wind Farm Design and Application to Offshore Wind in New Jersey Given Installation and Maintenance Policies," FERC Workshop/9th Annual Trans-Atlantic Infraday electricity markets and Planning, Energy Infrastructure and Systems, October 30, 2015.

Felder, F., *Capacity Building Program for Designing, Managing and Operating a Power Trading Entity in Nepal*, Workshop Facilitator, US Energy Association on behalf of USAID, September 14-18, 2015.

Park, J., Park, Y., Felder, F. and Athawale, R., "Calculating the Energy Cost Savings of Battery Energy Storage System for Frequency Control of Bulk Power Systems", International Conference on Electrical Engineering (ICEE 2015), Hong Kong, China, 5-9 July, 2015. (Paper No. ICEE15A-016-FP).

Felder, F., "Optimizing Reliability and Resiliency of Electric Distribution Systems," Center for Research in Regulated Industries, 28th Annual Western Conference, Monterey, CA, June 24-26, 2015.

Selcuklu, S, Coit, D. and Felder, F., "Aleatory and Epistemic Uncertainty Classification of the GEP Problem," ISERC, Nashville, TN, 2015.

Felder, F., "An Update on the American society of Civil Engineers' Infrastructure Report Card," Panel Participant, New Jersey Utilities Association 100th Annual Conference, Atlantic City, June 3-5, 2015.

Felder, F., "Optimizing Reliability and Resiliency of Electric Distribution Systems," Center for Research in Regulated Industries, 34th Annual Eastern Conference, Shawnee on Delaware, PA, May 13-15, 2015.

Felder, F & Athawale, R., "Efficiency and Equity Considerations in Designing Rates in the Context of the Death Spiral for Electric Utilities," 34th Annual Eastern Conference, Shawnee on Delaware, PA, May 13-15, 2015.

Felder, F., "Energy Security and Resiliency," Institute of Public Utilities Grid School 2015, Michigan State University, Chicago, IL, March 12, 2015.

Felder, F., "Transformative Technologies," Institute of Public Utilities Grid School 2015,

Michigan State University, Chicago, IL, March 11, 2015.

Felder, F., Athawale, R., Chanrdramowli, S. "Planning for the Future Electric Grid," New Jersey American Planning Association, New Brunswick, NJ, January 29, 2015.

Selcuklu, S., Coit, D. and Felder, F. "Aleatory and Epistemic Uncertainty Classification of the GenerationvExpansion Problem," Industrial and Systems Engineering Research Sessions (ISERC) 2015, May 30-June 2, 2015, Nashville, TN.

Felder, F., *Expert Topic Briefing: Negotiating a Universal Agreement on Climate Change*, World Affairs Council of Philadelphia, Philadelphia, PA, Dec. 10, 2014.

Felder, F., "Framework for Assessing Reliability," Center for Research in Regulated Industries, Rutgers University, Nov. 21, 2014 (presentation).

Chandramowli, S. and Felder, F., "LP-CEM: A modeling tool for power systems planning Incorporating climate change effects and macro-economic trends". Mid-Atlantic Regional Climate Symposium, Rutgers University, New Brunswick, NJ, November 20, 2014.

Shan, X., Felder, F., and Coit, D. "Game-theoretic Model for Electric Distribution Reliability from a Multiple Stakeholder Perspective," INFORMS, San Francisco, CA, Nov. 12, 2014 (presentation).

Shan, X., Felder, F., and Coit, D. "Game-theoretic Model for Electric Distribution Reliability from a Multiple Stakeholder Perspective," FERC Workshop/Trans-Atlantic Infraday, Washington, DC, November 7, 2014 (presentation).

Felder, F., Shan, X. and Coit, D. "Multi-Objective Framework for Evaluating Resiliency Measures for Electric Power Systems," FERC Workshop/Trans-Atlantic Infraday, Washington, DC, November 7, 2014 (presentation by Felder).

Chandramowli, S. and Felder, F., "LP-CEM: A Modeling Tool for Power Systems Planning Incorporating Climate Change Effects," Energy Policy Research Conference, San Francisco, Sept. 4, 2014 (paper and presentation by Felder).

Felder, F., "Energy Policy and Ethics," Rutgers University Research for Teachers in Engineering for Green Energy Technology and the Green Energy Technology for Undergraduates Program, New Brunswick, NJ, July 9, 2014.

Felder, F., "Combined Heat and Power & Resiliency: Case Study for Post-Sandy New Jersey," 2014 Louisiana Public Service Commission Combined Heat and Power Training Workshop, Louisiana State University, Baton Rouge, LA, June 25, 2014.

Felder, F., "How the Grid Works?" New Jersey Educational Foundation, Inc., *Energy 101*, New Brunswick, NJ, June 17, 2014 (presentation).

Shan, X., Felder, F., and D. Coit, "Game-theoretic Model for Electric Distribution Reliability with Government Intervention," CESUN 2014, June 8-11, 2014 (paper and presentation).

Chandramowli, S. and Felder, F., "Integrating Power System and Macroeconomic Modeling to Project the Impacts of Climate Change in New Jersey," *CESUN 2014, June 8-11, 2014 (poster).*

Li, S., Coit, D., Selcuklu, S., and Felder, F., "Electric Power Generation Expansion Planning Robust Optimization Considering Climate Change," Proceedings of the 2014 Industrial and Systems Engineering Research Conference, Y. Guan and H. Liao (eds), 2014.

Athawale, R. and Felder, F., "Incentivizing Combined Heat and Power Plants – How to Maximize Society Benefits?" 33rd Annual Eastern Conference, May 14-16, 2014 (paper and presentation).

Felder, F., "ISO Governance, ISO Principal-Agent Problem and Social Welfare," Center for Research in Regulated Industries, 33rd Annual Eastern Conference, May 14-16, 2014 (paper and presentation).

Felder, F., "Will the Potential for a Death Spiral in Electricity Rates Hinder Transformation of the Electric Power System?" Rutgers Energy Institute Ninth Annual Energy Symposium, May 6, 2014.

Curchitser, E. and Felder, F., "Climate-to-humans: A study of urbanized coastal environments, their economics and vulnerability to climate change," Decadal and Regional Climate Prediction using Earth System Models (EaSM) PI Meeting, NSF, January 27-29, 2014 (presentation by both).

*S. Selcuklu, D. Coit, Felder, F., M. Rodgers, and N. Wattanapongsakorn, "*A New Methodology for Solving Multi-Objective Stochastic Optimization Problems with Independent Objective Functions," IEEE International Conference on Industrial Engineering and Engineering Management (IEEM2013), Bangkok, Thailand, December 10-13, 2013 (paper and presentation by Coit).

Felder, F., "Case Study of the New York Independent System Operator's Governance," FERC Workshop/Trans-Atlantic Infraday (TAI), November 7-8, 2013 (presentation).

*Felder, F., "*RTO Governance Best Practices and Needed Improvements," APPA's Roundtable Discussion of the Current State of the RTO-Operated Electricity Market, Washington, DC, October 17, 2013, (presentation).

Chandramowli, S. and Felder, F., "Impact of Climate Change on Electricity Systems and Markets," INFORMS, Minneapolis, MN, Oct. 8, 2013 (interactive session, presented by Chandramowli).

Selcuklu, S., Felder, F., D. Coit, and M. Rodgers, "Pareto Uncertainty Index in Multi-Objective Genetic Algorithm: An Application to GEP," INFORMS, Minneapolis, MN, Oct. 8, 2013

(presentation by Selcuklu).

Felder, F., "Analyzing the Reliability and Resiliency of New Jersey's Urban Energy Systems in Response to Climate Change," DIMACS/CCICADA Workshop on Urban Planning for Climate Events, Rutgers University, Sept. 23, 2013 (presentation).

Felder, F., "EaSM Electricity Model Update," Regional Economists Network, Bloustein School, June 7th, 2013 (presentation).

Felder, F., "J.D. Power 2013 Hurricane Sandy Responsiveness Survey," New Jersey Utilities Association 98th Annual Conference, Galloway, NJ, June 6, 2013 (panel).

Felder, F., "Costs and Benefits of Combined Heat and Power," NJ Spotlight Webinar: Combined Heat and Power New Jersey, May 7, 2013 (presentation).

Felder, F., "Integrating New Jersey Renewable Energy Policies into Energy Markets," New York City, New York, May 1, 2013 (presentation and panel).

Felder, F., "Climate Change Mitigation and the Global Energy System," Villanova Environmental Law Journal, Villanova, Pennsylvania, April 13, 2013 (presentation).

Felder, F., "Climate Change Mitigation and the Global Energy System," Rutgers Law School Environmental Law Society, Newark, New Jersey, February 27, 2013 (presentation and panel).

Felder, F., "The NJ Spotlight Roundtable Series: Can the Energy Sector Drive New Jersey's Economy?" Ewing, New Jersey, January 28, 2013 (panel).

Farkas., C., Carlton, A., Felder, F., K Baker., and M. Rodgers., "Coupled Energy Market Trading and Air Quality models for improved simulation of peak AQ episodes," *Community Modeling and Analysis System Conference*, Durham, North Carolina, October 15-17, 2012 (presentation).

Selcuklu., S., Coit, D., Felder, F. and Rodgers, M., "Multi-Objective Generation Expansion Planning (GEP) Problem Optimization Using Pareto Uncertainty Index," INFORMS, Phoenix, Arizona, October 12-15, 2012 (presentation).

Rodgers, M., Coit, D., Felder, F. and Selcuklu, S., "A Roadmap for Formulating the Generation Expansion Planning Model to Include Societal Health Costs," INFORMS, Phoenix, Arizona, October 12-15, 2012 (presentation).

Felder, F., Ohio Clean Energy Transmission Conference, "What Drives Electricity Prices," Panel Discussion, Ohio State University, August 6, 2012 (presentation).

Felder, F., "Social and Economic Dimensions of Energy Choices," *Third Annual International Summer Symposium,* Rutgers University, June 4-6, 2012 (presentation).

Felder, F., "Design and Governance of Market-Based Electric Power Systems," *Third*

International Engineering Systems Symposium, Council of Engineering Systems Universities, Amsterdam, Netherlands, June 18-20, 2012 (presentation).

Felder F. and C. Loxley, "The Implications of a Vertical Demand Curve in Solar Renewable Portfolio Standards," 31st Annual Eastern Conference, Advanced Workshop in Regulation and Competition, Center for Research in Regulated Industries, Rutgers University, June 16-18, 2012 (paper and presentation).

Tekiner, H., Coit, D. and Felder, F., "Generation Expansion Planning (GEP) Problems Considering Uncertainty and Risk," INFORMS, Austin, TX, Nov. 10, 2010 (presentation by D. Coit).

Felder, F., "Electricity Markets Workshop", co-course developer and trainer for USAID Contract for South African Power Pool, January 31 through February 4, 2010, Kenya (presentations).

Other Publications

Felder, F., and Kumar, P. (2019). The Importance of Determining the Net Economic Impacts of Offshore Wind Energy for New Jersey, NJ Spotlight, September 19, 2019.

Felder, F. and Kumar, P. (2019). Measuring Energy Efficiency the Right Way, *NJ Spotlight*, February 19, 2019.

Felder, F. (2019). New Energy Directions, *NJ Municipalities*, February 2019, pp. 28-29.

Felder, F. If We Want Clean Energy, We Must Get Energy Prices Right, *NJ Spotlight,* April 18, 2017.

Athawale, R., & Felder, F. (2016, December 28). Economic Forecasts New. *New Jersey Business*.

Athawale, R., & Felder, F. (2015, December). Economic Forecasts New. *New Jersey Business*, 46-47.

Book Reviews

Felder, F. (2018). Review of the book *Competition and Regulation in Electricity Markets*, Sebastian Eyre and Michael G. Pollitt (eds.). *The Energy Journal*, 39(1), 255-258.

Felder, F. (2017). Review of the book The Economics of Electricity Markets by Darryl R. Biggar And Mohammad Reza Hesamzadeh. *The Energy Journal*, 38(1), 294-296.

Felder, F. (2016). Review of the book *Electricity Restructuring in the United States: Markets and Policy from the 1978 Energy Policy Act to the Present*, by S. Isser. *The Energy Journal*, 37(3), 294-296.

Felder, F. (2016). Review of the book *Electricity Markets and Power System Economics*, by D. Gan, D. Feng, & J. Xie. *The Energy Journal*, 37(2), 289-290.

Felder, F. (2014). Review of the book *Transforming the Grid: Electricity System Governance and Network Integration of Distributed Generation*, by D. Bauknecht. *The Energy Journal*, 35(3), 184-186.

Felder, F. (2013). Review of the book *Carbon Capture and Storage: Technologies, Policies, Economics and Implementation Strategies*, by S. M. Al-Fattah, M. F. Barghouty, & B. O. Dabbouti. *The Energy Journal*, 34(4).

Felder, F. (2011). Review of the book *Electricity Restructuring: The Texas Story*, by L. L. Kiesling and A. N. Kleit. *The Energy Journal*, 32(3), 239-241.

Reports

Burtraw, D., Blumsack, S., Bushnell, J., Felder, F., and Wood, F., *Peer Review of EPA's Power Sector Modeling Platform v6 using Integrated Planning Model*, March 2020, Industrial Economics Inc. for the U.S. Environmental Protection Agency.

Irving, W., Felder, F., Andrews, C., Traszka, J., and Senick, J., *Research Support for the New Jersey Community Solar Energy Pilot Program*, New Jersey Board of Public Utilities, February 19, 2019.

Cottrell, A., Nielsen, V., Cassidy, B., O'Rourke, K., Felder, F., Freed, M., Jafari, M., Mahani, K., Hunter, S. and Walker, T. *CHP and Fuel Cell Evaluation Study for New Jersey*, November 3, 2016.

Bank, J., Cheng, D., Costyk, D., Leyo, M., Seguin, R., Woyak, J., Acharay-Menon, A., Steffel, S., Athawale, R., and Felder, F., *Model-Based Integrated High Penetration Renewables Planning and Control Analysis*, Final Report, DOE SUNSHOT, DOE Award Number: DE-EE0006328, September 30, 2015.

Center for Energy, Economic and Environmental Policy, *Analyzing the Costs and Benefits of Electric Utility Hardening Efforts in Response to Severe Weathe*r, Final Report to the New Jersey Board of Public Utilities, November 30, 2014.

Consumer Advisory Council to the New York Independent System Operator, *Recommendations of the NYISO Consumer Advisory Council to the NYISO Board of Directors*, November 11, 2013.

Center for Energy, Economic & Environmental Policy, *EDC Solar Long-term Contracting Program Analysis*, August 15, 2012.

Seneca, J., Mantell, N., Lahr, M., Felder, F., Zobian, A., Irving, W., *Economic Impacts of PSE&G's Burlington-Camden Transmission Network Upgrade,* Submitted to PSE&G, December 2011.

Center for Energy, Economic & Environmental Policy, *A Review of Connecticut's Renewable Portfolio Standards,* July 2011.

Center for Energy, Economic & Environmental Policy, *Analysis for the 2011 Draft New Jersey Energy Master Plan Update*, March 2011.

Lathrop, R., Clough, B., Cottrell, A., Ehrenfeld, J., Felder, F., Green, E., Specca, D., Vodax, M., Xu, M., Zhang, Y. and Vail, C., *Assessing the Potential for New Jersey Forests to Sequester Carbon and Contribute to Greenhouse Gas Emission Avoidance*, prepared for the New Department of Environmental Protection, March 2011.

Center for Energy, Economic & Environmental Policy, *PSE&G Energy Technology Demonstration Grant Program – Final Report*, March 2011.

Lahr, M., Coughlin, E. and Felder, F., *Economic Impacts of Energy Infrastructure Investments,* October 2010.

Seneca, J., Mantell, N., Lahr, M., Hughes, J., Felder, F., Cottrell, A., Irving, W. and Knox, P. "Economic Impact Analysis: Proposed Upgrades to PSE&G's Branchburg-Roseland-Hudson Transmission Lines," Edward J. Bloustein School of Planning and Public Policy, Rutgers University, September 2010.

Seneca, J., Mantell, N., Felder, F., Lahr, M., Cottrell, A. and W. Irving, "Economic Impacts of the Proposed BlueOcean Energy Offshore Liquid Natural Gas Terminal on New Jersey: Update and Expansion of the 2007 Study," Edward J. Bloustein School of Planning and Public Policy, Rutgers University, July 2010.

Sponsored Research

Study of Public Procurement, Financial, and Legal Authorities Necessary to Facilitate the Development of Town Center Distributed Energy Resources (Microgrids), $60,000, New Jersey Board of Public Utilities, Senior Investigator, March 1, 2019 through February 28, 2021.

Rutgers Energy Institute, Rutgers University, $900,000, Director, July 2018 through June 2021.

Clean Energy Evaluation and Market Assessments, New Jersey Board of Public Utilities, $926,284, Principal Investigator, July 2016 through October 2017.

Clean Energy Evaluation and Market Assessments, New Jersey Board of Public Utilities, $926,284, Principal Investigator, September 2015 through June 2016.

Clean Energy Evaluation and Market Assessments, New Jersey Board of Public Utilities, $908,231, Principal Investigator, June 24, 2014 through November 6, 2015.

New Jersey Energy Resilience Bank, New Jersey Board of Public Utilities (funded by U.S. Department of Housing and Urban Development), $230,000, Principal Investigator, October 17, 2014 to March 31, 2017.

Solar Utility Networks: Replicable Innovations in Solar Energy (SUNRISE), U.S. Department of Energy (Subcontractor to PHI Services Company), $30,000, Principal Investigator, September 1, 2014 to August 31, 2016.

Clean Energy Evaluation and Market Assessments, New Jersey Board of Public Utilities, $1,356,553, Principal Investigator, June 2013 through November 2014.

Review of Impact Evaluation Contractors and Work Product, PSE&G, $113,479, Principal Investigator, January 15, 2012 to December 30, 2015.

Electricity Demand and the Impacts on Air Quality, Rutgers University Faculty Grant Proposal, $10,261, Principal Investigator, December 6, 2011 to December 30, 2012.

Evaluation of Reports re: Proposed Atlantic Wind Connection Backbone Transmission Project, Atlantic Wind Connection, $13,860, co-Principal Investigator, September 1, 2011 to October 31, 2011.

Review of Connecticut Renewable Portfolio Standards, Connecticut Energy Advisory Board, $58,963, Principal Investigator, February 18, 2011 to December 31, 2011.

Collection of Wind Resource Data, New Jersey Board of Public Utilities, $4,889, Principal Investigator, January 1, 2011 to September 30, 2011.

Economic Impacts of Water Main Infrastructure Investments, Winning Strategies, $40,782, Principal Investigator, December 20, 2010 to June 1, 2011.

Economic Impact of Accelerated Infrastructure Improvement Projects, New Jersey Natural Gas Company, $13,436, Principal Investigator, November 8, 2010 to January 14, 2011.

Economic Impacts of Water Main Infrastructure Investments, Aqua America, Inc., $17,702, Principal Investigator, November 15, 2010 to March 31, 2011.

Energy Technology Grants, PSEG Services Corporation, $236,000, Principal Investigator, December 1, 2009 to December 31, 2011.

Impacts of Energy Infrastructure, New Jersey Natural Gas, $13,587, June 17, 2010 to August 3, 2010.

Describe and Quantify the Economic Benefits of the NJ DEP Action Plan for the NJ Global Warming Response Act, New Jersey Department of Environmental Protection, $15,630, Principal Investigator,
July 14, 2009 to October 14, 2009.

MOA between Rutgers' Center for Energy, Economic and Environmental Policy (CEEEP) and the New Jersey BPU/Clean Energy Program, New Jersey Board of Public Utilities, $1,830,281, Principal Investigator, June 1, 2009 through May 31, 2013 (covering four contracts).

Rutgers University Teaching

Climate Change, Public Health and Policy (undergraduate)
Sustainable Energy Policy and Planning (graduate)
Introduction to Statistics (undergraduate and graduate)
The Science, Technology and Policy of Global Climate Change (undergraduate Byrne seminar, honors undergraduate seminar, undergraduate seminar at University of Konstanz)
Energy Engineering, Economics and Policy (graduate seminar; joint course with Princeton University)
Integrated Energy Challenges and Opportunities I and II (year-long graduate seminar)
Energy Planning for Communities Living in Landfills (Planning Studio)
Directed Studies: Victoria Nielsen (Fall 2013); Allison Bridges, Kathryn McKelvey, and Ishanie Niyogi (Spring 2013); Shankar Chandramowli (Summer 2012, Fall 2012, Fall, 2013), Zachary Froio (Fall 2017), Pratyusha Kiran (Fall 2017), Pranay Kumar (Fall 2017), Ashley Scull (Fall 2017)
In-depth Introduction to Electricity Markets (two-day professional short course)
Cost Benefit Analysis of Energy Efficiency and Renewable Energy Projects (one-day professional short course)
Environmental Management (four-day professional short course)

Rutgers University Service

Post-doctoral, Dissertation, Master Thesis, and Undergraduate Advisor/Committees:

- Jose Espiritu Nolasco, System Reliability Estimation and Component Replacement Analysis for Electricity Transmission and Distribution Systems, Oct. 2007 (external department doctoral committee member)
- Hatice Tekiner, Multi-Objective Power Generation Expansion Planning Considering Environmental Impacts and Smart Grid Technologies, Jan. 2008 to May 2010 (external department doctoral committee member)
- Ariel Martin, Development of a Decision Support System to Operate the Supplemental Lighting System in a Tomato Greenhouse Equipped with an On-site Power Generator, October 2013 (external department doctoral committee member)
- Bernhard Brauß, The Issue-Attention Cycle in Energy Policy, Bachelor Thesis, University of Konstanz, Department of Politics & Public Administration, March 2012 (Appraiser)

- Shuya Li, Robust Optimization of Generation Expansion Planning Problems Considering Climate Change's Uncertain Impact, September 2012 to May 2014 (external department masters committee member)
- Caroline Farkas, Impact and Sensitivity Analyses of Energy Sector Emissions: Air Quality Modeling of the PJM Region, Dec. 21, 2015, (external department doctoral committee member)
- Saltuk Bugra Selcuklu, Multi-objective Generation Expansion Planning Considering Uncertainty and Modeling with the Pareto Uncertainty Index, October 2015 (external department doctoral committee member)
- Shankar Chandramowli, Impact of Climate Change on Electricity Systems and Markets, January 2015 (doctoral committee chair)
- Xiaojun (Gene) Shan, Ph.D., Improving the Modeling of Offshore Wind and Electric Distribution Reliability for Public Policy Formulation, post-doc advisor, Jan. 2014-Dec. 2014
- Rebeca Meier, "Feed-in Tariff or Renewable Portfolio Standard – A Quantitative Analysis of the Impact of current Energy Policies on the Provision of Renewable Energy," Joint Masters Thesis with University of Konstanz and Rutgers University, Spring 2016
- Shane Patel, Fall 2014, "Characteristic Problems of Government-Supported Demonstration Scale Energy Innovation: Establishing A Framework for the Evaluation of Energy Innovation Government Programs, undergraduate research paper
- Chhayang Patel, 2014-2015 academic year, undergraduate Arresty Research Program Adviser
- Rutgers Energy Institute Summer Intern co-Adviser (Kaila Roffman, Summer 2015; Christopher Cohane, Summer 2014)
- Allison Bridges, Leveraging Amenity-Led Growth and Collective Action For Sustainable Development In Florianópolis, 1965-2016, April 2016, (doctoral committee member)
- Eric Zimmermann, Internship Supervisor, Summer 2016
- Brian Kemp, Internship Supervisor, Summer 2016
- Mark Rodgers, Simulation-based Optimization Models for Electricity Generation Expansion Planning Problems Considering Human Health Externalities, August 2016 (co-chair, doctoral committee)
- Sanling Song, Improving the Modeling of Offshore Wind and Electric Distribution Reliability for Public Policy Formulation, Feb. 2016 to Mar. 2017
- Carla Corona, Understanding Transitions to Sustainability in Developing Countries: The Chilean Energy Transition, May 2016
- Jacob Yu, Solar Market Analysis, Rutgers Energy Institute Summer Internship, 2017
- Ioanna Tsoulou, A Social-ecological Approach for Heat Adaptation of Senior Low-income Housing, March 2020, (doctoral committee member)

Rutgers University Senate (July 1, 2019 to June 30, 2021)
Bloustein Search Committee, Research Analyst in Urban Informatics (January to February 2019)
Bloustein Faculty Search Committee (Fall 2018 to Spring 2019)
Bloustein Teaching and Advising Committee (Spring 2018)

Bloustein School Non-tenure Track Appointment and Promotion Committee (April 2018 to present)
Bloustein School Strategic Planning Committee for Research, Practice and Service (March-April 2018)
Hult Prize Challenge, Judge (December 2017)
Bloustein School Search Committee, Research Professor/Director of Research and Evaluation, Heldrich Center for Workforce Development (2017 to 2018)
School of Graduate Studies, Graduate Faculty in Energy Systems (Spring 2015 to present)
Bloustein School Liaison with School of Engineering regarding Masters of Energy Systems (Spring 2015)
Board of Advisors, Rutgers EcoComplex Advisory Board, Member, May 6, 2014 to present
Bloustein Faculty Council: Non-tenure Track Committee, May 2014
Lead Instructor for a class on "Sustainable Energy" for New Jersey Governor's School in Engineering & Technology (Summer 2012); Lecturer Summer 2018
Steering Committee, Edward J. Bloustein School of Planning and Public Policy, September 2006 to August 2008
Associate Director, Rutgers Energy Institute, May 2007 to April 2009
New Jersey State Sustainability Institute, Expert Advisory Board (July 2006 to Dec. 2007)

Other Academic Activities

Editorial Boards

Member of Editorial Board, *Energy Efficiency* (January 2020 to present)
Member of Editorial Board, *Utilities Policy* (September 2016 to present)
Member of Editorial Board, *The Electricity Journal* (January 2013 to date)
Book Review Editor, *The Energy Journal* (January 2012 to July 2019)
Member of Editorial Board, *KIEE International Transactions on Power Engineering* (2005 to 2006)
Member of Editorial Board, *SAM Advanced Management Journal*, (December 2002 to August 2004)

Reviewer

*Applied Energy (*June 2018*), WIREs Energy and Environment* (December 2017), *Journal of Planning Education and Research* (June 2017; July 2018), *Energy Research and Social Science* (January 2017), *Energy Efficiency Journal* (October 2019, February 2018, October 2016), The *Energy Journal* (August 2019, August 2016; March 2017), *Netherlands Foundation for Fundamental Research on Matter, FOM* (May 2016); *International Political Science Review* (April 2016), *MIT Press* (January 2016), *CSEE Journal of Power and Energy* Systems (November 2015), *Sustainable Cities and* Society (August 2015), *IBM Journal of Research and* Development (May 2015), *Nature Climate Change* (Apr. 2015), *Utilities Policy* (December 2018, June 2018, March 2018, Jan. 2017, Oct. 2016, Jan. 2015, June 2015, July 2015, August 2015, Oct. 2015, April 2016; July 2016), PNAS (Dec. 2014), *Environmental Science & Technology* (Nov. 2014, March 2016; April 2018), *European Journal of Transport and Infrastructure Research* (Sept. 2014, Nov. 2017), *Climatic Change* (June 2018, Sept. 2014),

Transportation Research Part D: Transport and Environment (June 2014, March 2018), *Electric Power Systems Research* (Mar. 2014), *International Journal of Management Science and Engineering Management* (August 2013), *Policy Sciences* (June 2013), *Environmental Science and Technology* (August 2013), Academy of Finland (April 2013), Nazarbayev University (Winter 2013; Fall 2013; Winter 2017), *Journal of Regulatory Economics* (January 2013), New Jersey Department of Environmental Protection (May 2013)

Invited Academic Activities

International Conference of Applied Energy, "Applied Energy Symposium: MIT A+B," Session co-Chair, May 22-23, 2019.
Geographical Sciences Committee, National Academies of Sciences, Engineering and Medicine, "Climate Change, Coastal Flooding, and the Electric Power Grid," December 6, 2018.
China-US 2018 Joint Eco-environmental Symposium: Advances in Critical Needs for the Nexus of Food, Energy, and Water Systems, Invited Keynote Speaker, October 24-28, 2018
Symposium on Realizing the Value of Nuclear Engineering – A Celebration of Michael Golay's Career, Cambridge, MA, March 26-27, 2018
Peer Reviewer, US Department of Energy, International Electricity Market Model (Nov. 2016)
University of Texas Interdisciplinary Electricity Conference, "The Nexus of Markets and the Environment," Austin, TX, April 21-22, 2016
Initiative for Sustainable Electric Power Systems Workshop, Penn State University, November 19-20, 2015, invited speaker
INFORMS 2015, organized session on Optimizing Reliability and Resiliency of Electric Power Systems, November 2015
University of Texas Interdisciplinary Electricity Conference, "The Nexus of Markets and the Environment," Austin, TX, April 9-10, 2015
Organizing Committee, Center for Research in Regulated Industries, Rutgers Business School, 34th Annual Eastern Conference
Session Chair, FERC Workshop/Trans-Atlantic Infraday, Electricity Markets Restructuring, Nov. 7, 2014
Invited Lecturer, Center for Sustainable Electric Power Systems Seminar, Penn State University, October 14, 2014
Rutgers Energy Institute, 9th Annual Symposium, "Will the Potential for a Death Spiral in Electricity Rates Hinder Transformation of the Electric Power System?", May 6, 2014
Invited Panelist, 2014 Biennial Workshop in Service Engineering (BeWiSE), Penn State University, September 16-17, 2014
Technical Program Committee, Council of Engineering Systems Universities (June 8-11, 2014)
Invited Participant, KAPSRC, Workshop on Energy Systems Modeling (October 3, 2013)
Invited Participant, MIT Conference on Modeling Social, Technical and Natural Systems for Policy (September 25-27, 2013)
Discussant, Center for Research in Regulated Industries (May 16 & 17, 2013)
Expert participant in *Gathering Global Intelligence to Accelerate Development—Foreign Experts Traveling in Anhui Specialized in New Energy*, (September 24-27, 2012)
Participant, Council of Engineering Systems Universities Conference, Delft, (June 18-20, 2012)

INDUSTRY EXPERIENCE

The Economics Resource Group, Inc., Cambridge, MA, *Senior Consultant* (title upon departure from firm), June 1994 to May 1998

Lead consultant and case manager for a variety of projects in the electric power industry. Responsibilities included advising clients on wholesale market and power pool restructuring; providing testimony; evaluating regulatory policy proposals; and conducting antitrust, price forecast, and financial analyses.

U.S. Navy, *Lieutenant* (rank upon completion of service), 1987 to1992

Performed the duties of Department Head, Assistant Project Manager, Quality Assurance Manager, and Power Plant Supervisor for a naval nuclear propulsion plant. Planned and scheduled divisional maintenance and supervised and trained shifts of nuclear power plant personnel in power plant operations and maintenance.

OTHER PROFESSIONAL ACTIVITIES

International USAID Activities

- International Experiences in Power Market Development and Cross Border Electricity Trade: Lessons Learned from Emerging and Developed Markets, USAID, January 15, 2016, New Delhi, India
- Capacity Building Program for Designing, Managing and Operating a Power Trading Entity in Nepal, USAID, September 14-18, 2015
- Workshop on Efficient and Effective Electricity Market Design, Operation and Management, Kenya, USAID, Feb. 1-5, 2010
- Regional Electricity Markets Workshop, Libreville, Gabon, USAID, January 25-30, 2009
- Electricity Market Development Program, Bentota, Sri Lanka USAID, August 18-20, 2008
- Electricity Market Development Program, Dhaka, Bangladesh, USAID, August 13-15, 2008

Consumer Advisory Council, New York Independent System Operator, March 18, 2011 to December 1, 2013, Co-Chair.

Energy Services Providers, Troy, NY, Director, March 2005 to July 2006
Member of the Board of Directors of a retail electricity supplier.

Validigm Corporation, New York, NY, *Director*, June 2000 to December 2000
Member of the Board of Directors of a high-tech, computer network evaluation and applications company.

HONORS AND AWARDS

Associate Member, Sigma Xi, Scientific Research Honor Society of North America, elected 1994
Member, Tau Beta Pi, National Engineering Honor Society
Member, Alpha Sigma Nu, American Nuclear Society Honor Society
Twice awarded the Navy Achievement Medal

DEPOSITIONS (Last Four Years)

Michael Todd, et al. v. XOOM Energy Maryland, LLC, et al., Case No. 8:15-cv-00154-GJH (D. Md.) on August 23, 2018 and November 26, 2019.

Danielle Bell v. Gateway Energy Services Corporation, Case No. 031168/2018 (N.Y. Super. Ct., Rockland Cnty.) on January 3, 2020.